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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,383	04/15/2004	Hiromi Matsusaka	P25217	6631

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EXAMINER	
LU, ZHIYU	
ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/26/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No.	Applicant(s)	
	10/824,383	MATSUSAKA, HIROMI	
	Examiner	Art Unit	
	Zhiyu Lu	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888).

Regarding claim 2, Lindoff teaches a radio reception apparatus comprising:

a receiver (401 of Fig. 4) configured to receive a signal on a per time unit basis (inherent in TDMA system), the received signal including a known signal pattern (402 of Fig. 4);

an adjuster (405 and 407 of Fig. 4) configured to adjust a filter for filtering the received signal using the known signal pattern on a per time unit basis (406 of Fig. 4); and

a canceller (406 of Fig. 4) configured to cancel an interference component included in the time unit using the adjusted filter (3 of Fig. 2);

wherein the adjust comprises:

a tap coefficient controller configured to control tap coefficients to set the filter according to the determined modulation scheme (column 5 lines 50-51).

But, Lindoff does not expressly disclose a modulation scheme determiner configured to process likelihoods calculated for individual modulation schemes and to determine the modulation using the known signal pattern.

However, it is well known that different modulation schemes require different training signals. And Lindoff teaches usage of using MLSE Viterbi equalizer (column 6 lines 33-41), which is known for using maximum likelihood calculation to determine modulation, where all possible transmitted symbol sequences are considered (Fig. 1, column 1 lines 44-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize and use Viterbi algorithm in the radio reception apparatus of Lindoff, in order to provide effective modulation estimation and filtering.

Regarding claim 6, Lindoff teaches the limitation of claim 2.

Lindoff teaches the canceller cancels adjacent channel inter-symbol interference (column 1 lines 16-27, column 4 lines 28-33).

Regarding claim 7, Lindoff teaches the limitation of claim 2.

It would have been obvious to one of ordinary skill in the art to recognize Lindoff teaches wherein the adjuster adjusts a filter characteristic of the filter such that a combined characteristic of said filter with a baseband filter at a communicating partner station has a

Nyquist characteristic because Nyquist charactistic is fundamental for signal reconstruction, which is essentially needed in sampling and signal processing.

Regarding claim 8, Lindoff teaches the limitation of claim 2.
Lindoff teaches a communication terminal apparatus including the radio reception apparatus (column 4 lines 11-14).

Regarding claim 9, Lindoff teaches the limitation of claim 2.
It would have been obvious to one of ordinary skill in the art to incorporate the radio reception apparatus in a base station apparatus (column 3 lines 61-64) for interference cancellation on received signals

Regarding claim 10, Lindoff teaches a reception filtering method as explained in the response to claim 2 above.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Jayaraman et al. (US2003/0087622).
Regarding claim 3, Lindoff teaches a radio reception apparatus as explained in the response to claim 2 above.
But, Lindoff does not expressly disclose a frequency converter configured to perform a frequency analysis of the received signal; the tap coefficients are set according to a detection result of adjacent channel interference.

Jayaraman et al. teach a frequency converter configured to perform frequency analysis of the received signal before processing (paragraph 0028); and using detected adjacent channel interference result to set filter, which includes setting tap coefficients (Figs. 2-5, paragraphs 0011-0013).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using detected adjacent channel interference result to set filter parameters taught by Jayaraman et al. into the radio reception apparatus of Lindoff, in order to provide parameters for more accurate filter settings.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Casas et al. (US Patent#7027500).

Regarding claim 4, Lindoff teaches a radio reception apparatus as explained in the response to claim 2 above.

But, Lindoff does not expressly disclose a transmission path characteristic estimator configured to estimate a transmission path characteristic using the known signal pattern included in the received signal from which interference is canceled; an error measurer configured to measure an error of the received signal that occurs due to a transmission path characteristic by comparing the known signal pattern included in the received signal with a known signal pattern obtained by the transmission path characteristic; and a tap coefficient controller configured to control tap coefficients to set the filter based on the measured error and a reception level of the received signal.

Casas et al. teach a transmission path characteristic estimator configured to estimate a transmission path characteristic using the known signal pattern included in the received signal from which interference is canceled; an error measurer configured to measure an error of the received signal that occurs due to a transmission path characteristic by comparing the known signal pattern included in the received signal with a known signal pattern obtained by the transmission path characteristic; and a tap coefficient controller configured to control tap coefficients to set the filter based on the measured error and a reception level of the received signal (Fig. 1, column 2 line 53 to column 4 line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate setting tap coefficients based on results from measured error and reception level taught by Casas et al. into the radio reception apparatus of Lindoff, in order to set filtering parameters to cancel distortion.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Perets (US2003/0003889).

Regarding claim 5, Lindoff teaches the limitation of claim 2.

But, Lindoff does not expressly disclose the canceller comprises a plurality of filters having different filter characteristics; and adjuster comprises a filter selector configured to select one of the plurality filters according to the determined modulation scheme.

Perets teaches one of a plurality of filters having different filter characteristics (Fig. 2) is selected according to an adjuster (Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the selectable filter of Perets into the radio reception apparatus of Lindoff, in order to provide additional filtering.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhiyu Lu whose telephone number is (571) 272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

3/19/07

QUOCHIEN B. VUONG
PRIMARY EXAMINER

Zhiyu Lu
March 16, 2007